CLAIMS:

1. An erosion-resistant article comprising:

a support; and

an oxide coating comprising yttrium disposed over said support, wherein said support and said oxide coating have material compositions that differ from one another in coefficient of thermal expansion by no more than $5x10^{-6}/K$, and wherein said erosion-resistant article is a plasma process chamber component.

2. The erosion-resistant article of claim 1, wherein said material compositions differ from one another in coefficient of thermal expansion by no more than $3x10^{-6}/K$.

3. The erosion-resistant article of claim 1, wherein said material compositions differ from one another in coefficient of thermal expansion by no more than $1x10^{-6}/K$.

4. The erosion-resistant article of claim 1, wherein said support is an aluminum-silicon carbide support.

5. The erosion-resistant article of claim 1, wherein said support is an aluminum oxide support.

6. The erosion-resistant article of claim 1, wherein said support is selected from an aluminum nitride support, a silicon carbide support, and a zirconium alloy support.

7. The erosion-resistant article of claim 1, wherein said oxide coating is an yttria coating.

8. The erosion-resistant article of claim 1, wherein said oxide coating further comprises aluminum.

9. The erosion-resistant article of claim 8, wherein said oxide coating is an yttrium aluminum garnet coating.

10. The erosion-resistant article of claim 1, further comprising an intermediate region between said oxide coating and said support, wherein said intermediate region, said support and said oxide coating have material compositions that differ from one another in coefficient of thermal expansion by no more than $5x10^{-6}/K$.

11. The erosion-resistant article of claim 1, wherein said component is a chamber wall component.

12. The erosion-resistant article of claim 1, wherein said component is a ring-shaped component.

13. The erosion-resistant article of claim 12, wherein said ring-shaped component is a process kit component.

14. The erosion-resistant article of claim 13, wherein said ring-shaped component is a focus ring.

15. The erosion-resistant article of claim 13, wherein said ring-shaped component is a capture ring.

16. The erosion-resistant article of claim 13, wherein said ring-shaped component is an insert ring.

17. The erosion-resistant article of claim 1, wherein said component is a dielectric window.

18. The erosion-resistant article of claim 1, wherein said support is formed from a material selected from alumina and aluminum-silicon carbide and wherein said oxide coating is selected from yttria and yttrium aluminum garnet.

19. The erosion-resistant article of claim 18, wherein said plasma process chamber component is selected from a focus ring, an insert ring, a capture ring, a chamber wall component and a dielectric window.

20. A method of making an erosion-resistant article comprising:

providing a support; and

providing an oxide coating comprising yttrium disposed over said support, wherein said support and said oxide coating have material compositions that differ from one another in coefficient of thermal expansion by no more than $5x10^{-6}/K$, and wherein said erosion-resistant article is a plasma process chamber component.

21. The method of claim 20, wherein said oxide coating is provided over said support by a process comprising a physical vapor deposition step or a chemical vapor deposition step.

22. The method of claim 20, wherein said oxide coating is provided over said support by a process comprising a thermal spraying step.

23. The method of claim 22, wherein said thermal spraying step is a plasma-spraying step.

24. The method of claim 20, wherein said support is selected from alumina and aluminum-silicon carbide, and wherein said oxide composition is selected from yttrium oxide and yttrium aluminum garnet.

25. The method of claim 20, wherein said oxide coating is provided by a process comprising a sintering step.

26. The method of claim 25, wherein said process comprises a hot pressing step.

27. The method of claim 25, wherein said process comprises a dry pressing step and a sintering step.

28. The method of claim 20, wherein said support and said wherein said oxide coating are provided by a process comprising at least one sintering step.

29. The method of claim 28, wherein said support is formed from a powdered raw mixture comprising alumina particles and said oxide coating is formed from a powdered raw mixture comprising (a) particles of yttrium oxide, (b) particles of yttrium aluminum garnet, or (c) particles of both yttrium oxide and aluminum oxide.